**FORCE, MOTION AND NEWTON’S LAWS**

**Objectives Covered Through This Menu and These Activities\_\_\_\_\_\_\_\_\_\_\_**

* Students will distinguish between speed and velocity.
* Students will calculate force, speed, and acceleration using real-world  
  applications.
* Students will identify examples of force and Newton's three laws of  
  motion in their daily lives.

**Materials Needed by Students for Completion\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* Poster board or large white paper
* Microsoft PowerPoint or other slideshow software
* Magazines (for collage)
* Materials for creating a marble roller coaster
* DVD or VHS recorder

**DUE TUESDAY, FEBRUARY 26, 2013**

***Clickable Copy at*** [***http://sciencewithzest-kipptulsa.wikispaces.com/KIPP+Physical+Science***](http://sciencewithzest-kipptulsa.wikispaces.com/KIPP+Physical+Science)

**Force, Motion, and Newton's Laws**

Guidelines:

1. You may complete as many of the activities listed within the time period.
2. You may choose any combination of activities.
3. Your goal is 100 points.
4. You may be as creative as you like within the guidelines listed below.
5. You must show your plan to your teacher by ***Wednesday, February 14.***
6. Activities may be turned in at any time during the working time period. They will be graded and recorded on this sheet as you continue to work, so keep it safe!

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Plan to Do** | **Activity to Complete** | **Point Value** | **Date Completed** | **Points Earned** |
|  | Research Rube Goldberg and his machines. Create your own Rube Goldberg machine that can move a marble more than one meter, has at least 10 different parts.   * Improve and play this interactive Rube Goldberg machine: <http://pbskids.org/zoom/games/goldburgertogo/rubegame.html> * <http://www.ehow.com/list_7502203_rube-goldberg-invention-ideas.html> * <http://thescienceguru.com/wp-content/uploads/2011/06/Rube-Goldberg-Project.pdf> * Rube Goldberg PlayList: click below or go to <http://www.youtube.com/playlist?list=PLuTQDhx6pcEafYQiv6Q5xNlwvPgZCCcBz> | 60 |  |  |
|  | Create a roller coaster with at least three hills and one loop that can transport a “train” (marble, car etc.) at least 2 meters from start to finish.   * Design and play this interactive roller coaster game for 10 extra points: <http://www.funderstanding.com/slg/coaster/> * <http://www.learner.org/interactives/parkphysics/coaster/> * <http://www.sciencebuddies.org/science-fair-projects/project_ideas/Phys_p036.shtml#background> * <http://www.ehow.com/info_8560845_materials-roller-coaster-science-project.html> * Roller Coaster Playlist: <http://www.youtube.com/playlist?list=PLuTQDhx6pcEafYQiv6Q5xNlwvPgZCCcBz> | 50 |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Create a children's book that teaches young readers about force and Newton's three laws of motion.   * Resources for teaching Laws of Motion to young readers: <http://www.ehow.com/how_5843808_teach-laws-motion-elementary-school.html> * Online student-made books: <http://www.studentreasures.com/book-samples> (look at Into the Wild Rollercoaster of the Human Body) | 50 |  |  |
|  | Record an educational video about Newton's three laws of motion and the part they play in our daily lives.  Good Resource:   * <http://www.neok12.com/Laws-of-Motion.htm> | 50 |  |  |
|  | Physicists have proclaimed that any motion could be an example of all three of Newton's laws of motion, depending on how you interpret the motion. Create a brochure that supports or disproves this statement. | 30 |  |  |
|  | Develop a unique method for remembering each of Newton's laws. Share vour method with your classmates. Raps and songs encouraged! | 30 |  |  |
|  | How would Isaac Newton feel about being so famous in today's time? Prepare a "You Be the Person" presentation to answer your classmates' questions about your life and work.  Good Resource: <http://teachertech.rice.edu/Participants/louviere/Newton/law1.html> | 30 |  |  |
|  | Create a song or rap that explains differences between speed and velocity. | 20 |  |  |
|  | Develop a worksheet for calculating force, speed, or acceleration with at least five real-world situations. | 20 |  |  |
|  | Design and play a Goldberg type machine at <http://pbskids.org/zoom/games/goldburgertogo/index.html> | 20 |  |  |
|  | Design a PowerPoint presentation that teaches users how to calculate speed, force, and acceleration. | 15 |  |  |
|  | Create a windowpane for the 10 most important vocabulary words in this unit.  Example: [windowpane vocabulary link](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&ved=0CDQQFjAB&url=http%3A%2F%2Fimage.epsilen.com%2FDownload%2FDownloaderPopup.aspx%3FfileID%3DWAb%2FyEui3%2FQ%3D%26hostUserAccountID%3DoWyC2Bgwnis%3D%26isPublic%3DGt9CW5WreOc%3D%26SessionHostUserAccountID%3DoWyC2Bgwnis%3D%26SessionHostID%3D%2F9hBT3OGLJo%3D%26SessionWebsiteID%3D4MUhihjA9p4%3D&ei=QG8cUf29JtSdqQHijYCwCg&usg=AFQjCNF1h0fqyCMA5ftLBadGi6RFF_5DUQ) | 10 |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Create a collage of pictures that show forces at work In our daily lives. Identify the forces at work in each picture. Example: <http://einstein.stanford.edu/Library/images/GPB_overview_collage.jpg> | 10 |  |  |
|  | Make a flipbook for Newton's three laws of motion.   * <http://www.flipsnack.com/> * <http://teachscience4all.wordpress.com/2010/01/09/foldables-in-science/> | 10 |  |  |
|  | Submit your free-choice proposal form for a product of your choice. | 10-30 |  |  |
|  | **Total number of points you are planning to earn. Total points earned:** | | |  |

I am planning to complete \_\_\_\_\_\_\_\_\_activities that could earn up to a total of\_\_\_\_\_\_ points.

Teacher’s initials\_\_\_\_\_\_\_\_\_ Student’s signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_